

DISTRIBUTIONAL RECORDS FOR SOME INDIAN TURTLES¹

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A nine month survey of emydid and trionychid turtles in India conducted by the authors in 1982-1983 produced noteworthy distribution records for 10 species: *Cuora amboinensis*, *Geoclemys hamiltoni*, *Kachuga tecta*, *Melanochelys tricarinata*, *Melanochelys trijuga indopeninsularis*, *Morenia petersi*, *Chitra indica*, *Pelochelys bibroni*, *Trionyx hurum* and *Trionyx leithii*.

INTRODUCTION

From September 1982 through June 1983 we conducted status surveys of emydid and trionychid turtles in nine Indian states. The primary objective of the project was to investigate the conservation status and needs of these frequently exploited species. Certain of our findings have been reported previously (Groombridge *et al.* 1983, Moll 1985a, 1985b and *in press*). In the course of these surveys we discovered several noteworthy distribution records. These are reported herein.

METHODS

Aquatic habitats were sampled with trammel nets and hoop traps baited with fish or chicken entrails. Fishermen were asked to bring in any turtles incidentally caught in their nets. Local markets and garbage dumps were canvassed for turtles and skeletal remains respectively.

Specimens were measured to the nearest millimeter with vernier calipers in the manner of Carr (1952). Measurements including maxi-

mum straight line carapace length (CL), carapace width (CW), plastron length (PL) and shell height (H) are given in millimeters. Weights were taken with a spring scale to the nearest 5g for turtles less than 5 kg and to the nearest 0.5 kg for larger species.

Museum abbreviations include: BNHS — Bombay Natural History Society, EOM — E. O. Moll field numbers, FMNH — Field Museum of Natural History, Chicago, Illinois, ZSI — Zoological Survey of India, Calcutta.

RESULTS AND DISCUSSION

EMYDIDAE

Cuora amboinensis (Daudin)

Material: Juvenile from Mazbat, nr. Mavgaldai, Darrang District, Assam; ZSI 16690 — 52 CL, 41 CW, 47 PL, 20 H.

Smith (1931) reported Tenasserim as the western-most limit of the range of this species. More recent finds indicate that India is the western limit of the range.

Biswas and Sanyal (1977) reported a specimen of *Cuora* from the Nicobar Islands. In passing they mentioned another specimen in the Zoological Survey of India collection from Assam. In 1983, we had opportunity to verify the identification of this specimen, ZSI 16690.

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from near Maugaldai which is N of the Brahmaputra River.

The specimen appears to be a juvenile near hatchling size. The head pattern of three yellow stripes is typical for the species. The uppermost stripe runs from the snout above the eye and tympanum onto the neck. A lateral stripe extends from the snout through the eye over the tympanum and onto the neck. The ventral most stripe runs under the eye curving upward to meet the lateral stripe just anterior to the tympanum.

The plastral pattern is also typical with each yellow scute being marked with a dark blotch. However, the carapace pattern of three light stripes on a dark background appears unreported for the species. It comprises a broad mid-sagittal stripe flanked by a pair of thin lateral stripes that extend over a weak, broken, keel along the pleural scutes.

The discovery of *Cuora amboinensis* in Bangladesh (Khan 1982) supports the validity of this locality.

Geoclemys hamiltoni (Gray)

Material: One carapace found in a garbage dump at Bherihari Colony Village, c. 10 km S Gandak Dam, West Champaran District, Bihar; BNHS 1316 — 322 CL, 201 CW.

Smith (1931) reported the distribution as Northern India from Sind to Bengal pointing out that precise locality data were rare. The only recent information on the range in India is its discovery in Kaziranga National Park in Assam (Vijaya 1983).

Reputedly taken in a forest pond, the Bihar specimen is the largest recorded for India. Minton (1966) reported a 350 CL specimen from Pakistan. The finding of this turtle so near the Nepal border suggests that the range includes this country as well.

Kachuga tecta (Gray)

Material: Female from Narmada River, Dhavdi Ghat, Nr Punasa, East Nimar District, Madhya Pradesh; EOM 2784 — 183 CL, 142 CW, 172 PL, 89 H, 960 g. Two juvenile specimens from Chandola Lake, nr. Ahmedabad, Ahmedabad District, Gujarat (collected by P. Kannan): BNHS 1290 — 86 CL, 65 CW, 80 PL, 45 H; BNHS 1291 — 85 CL, 68 CW, 81 PL, 45 H.

Smith (1931) defined the range as northern India including the Ganges, Brahmaputra, and Indus River systems but mentioned its exact limits were not clearly defined. The above specimens extend the range from these northern drainages into peninsular India.

Melanochelys tricarinata (Blyth)

Material: Three specimens from a forest near Bherihari Colony Village, c. 10 km South Gandak Dam, West Champaran District, Bihar: BNHS 1317, female — 138 CL, 88 CW, 116 PL, 57 H; BNHS 1318 (carapace only) — 143 CL, 94 CW; living male — 155 CL, 100 CW, 134 PL, 67 H, 440 g.

Smith (1931) reported the range of this species as "Chaibassa district, Chota Nagpur (Bihar); Jalpaiguri district, N. Bengal and Dafflas and Bisnath Plain, N. Assam. Although Smith regarded the species as a hill species, the present specimens come from flatland forest. These records extend the turtles range in Bihar to the extreme northwestern corner of the state. The close approximation of Uttar Pradesh and Nepal to this site suggests that the turtle occurs in these localities as well. In fact we have seen photos of a tricarinata hill turtle taken in Nepal's Chitawan National Park by Mr. Peter Jackson of the International Union for the Conservation of Nature (IUCN).

Melanochelys trijuga indopenisularis
(Annandale)

Material: 26 specimens from Bherihari Colony Village, 10 km S. Valmiki Nagar (at Nepal Border), West Champaran District, Bihar: EOM 2887 juv. — 123 CL, 89 CW, 113 PL, 51 H, 265 g; EOM 2888 male — 250 CL, 169 CW, 226 PL, 99 H, 1935 g; 24 shells EOM 2842-2862 — 129-326 ($x=237$) CL, 99-219 ($x=165$) CW.

Smith (1931) reports the range as Chota Nagpur and Jalpaiguri District, N. Bengal. Our records extend the range to extreme north-western Bihar and suggest the likelihood of its occurrence in adjacent Uttar Pradesh and Nepal.

According to villagers these specimens came from forest ponds and small tributaries of the Gandak River.

Morenia petersi (Anderson)

Material: Three specimens from an oxbow lake and nullah, Udaipur Forest, 15 km W. Bettah, Bihar: FMNH 224146, male im. — 113 CL, 77 CW, 101 PL, 56 H, 235 g; FMNH 224150, male im. — 100 CL, 74 CW, 88 PL, 53 H, 190 g; BNHS 1315, female im. — 128 CL, 92 CW, 116 PL, 67 H, 380 g.

Smith (1931) reported this species only from Jessore District, Dacca and Fategarth in Bengal, areas which are now in Bangladesh. In 1859, Blyth obtained 2 living specimens from the Calcutta markets but their origin was uncertain. Our specimens establish the occurrence of *Morenia* in India and extend the western limits of the range to northwest Bihar. Khan (1982) reported that the turtle is associated with riverine habitats in Bangladesh. These specimens were found in weed choked nullah with little current and in a more open oxbow lake.

TRIONYCHIDAE

Chitra indica (Gray)

Material: One carapace collected from the Godaveri River at Polavaram, East Godaveri District, Andhra Pradesh; EOM 2692 — Length of bony carapace 353. Six carapaces from the confluence of the Mahanadi and Kathugauri Rivers, Nanaj, Cuttack District, Orissa: EOM 2697, 2700 — 2703 and FMNH 224234 — Lengths of bony carapaces, 169-322 ($x=210$).

This large softshell has long been known from the Indus and Gangetic drainage in India (Smith 1931, Minton 1966). Webb (1981) discovered two specimens collected near Dhond, Maharashtra (190 km ESE Bombay) in the collection of the Zoological Survey of India. Presumably these turtles came from the Krishna River drainage. Our specimen supports the occurrence of the narrowheaded soft shell in peninsular India and adds the Godaveri and Mahanadi Rivers to the range.

Pelochelys bibroni (Owen)

Material: Two carapaces, from the mouth of Subarnarekha River, Udaipur Village, 3 mi. NE Chananeswar, Balasore District, Orissa: FMNH 224233 and EOM 2676 — Lengths of bony carapaces, 318 and 323 respectively. One unnumbered juvenile specimen in the Trivandrum Museum collected in 1909 and labelled Trivandrum, Kerala; — 310 CL, 257 CW, 251 PL, 51 H.

Smith (1931) reported a specimen of *Pelochelys* in the Indian Museum labelled Calcutta but considered the occurrence of this species in India to be doubtful. More recently definite identifications of *Pelochelys* have been made in Indian waters. Nair and Badrudeen (1975) reported on a specimen collected at sea near Point Calimere, Tamil Nadu. C. S.

Karr found *Pelochelys* nesting with olive ridley sea turtles on the Gahirmata nesting beach in Orissa (Vijaya 1982).

The two carapaces from the Subarnarekha River extend the known range in India to the Orissa — West Bengal border. The specimen from Trivandrum indicates that this turtle also inhabits the West Coast of India. Jerdon (1853) mentioned that a specimen identified as *Gymnopus indicus* was collected at Mahe along the Malabar coast. Webb (1981) suggested that due to the marine habitat of this specimen that it might be *Pelochelys* rather than a *Chitra*. The Trivandrum record adds support to this view.

Trionyx hurum Gray

Material: One male collected in the Gandak River, Bherihari Wildlife Sanctuary, West Champaran District, Bihar; BNHS 1313 — 302 CL, 224 CW, 227 PL, 84 H. One immature female from the Gandak River, border between India and Nepal, 5 mi S. Valmiki Nagar, West Champaran District, Bihar; EOM 2863 — 277 CL, 221 CW, 198 PL, 69 H, 2185 g.

Smith (1931) listed the range as lower reaches of the Ganges and Brahmaputra. Forty per cent (14 of 36) of the *Trionyx* that we observed in markets in Northern West Bengal (i.e. around Siliguri and Jalpaiguri) were *T. hurum*. Market vendors reported that most of these came from the northern tributaries of the Ganges. These specimens from the Gandak River confirm the occurrence of peacock softshells in northwestern Bihar, northeastern Uttar Pradesh and Nepal.

Trionyx leithii Gray

Material: Two specimens from pond adjacent to Godaveri River, Kotipalle, East Godaveri District, Andhra Pradesh: FMNH 224235

female im. — 358 CL, 303 CW, 271 PL, 85 H, 4.4 kg; living male presently at Madras Crocodile Bank — 591 CL, 488 CW, 435 PL, 175 H, 26 kg. One living female from Balimela Reservoir, Sileru River, Chittrakonda, Koraput District, Orissa; currently at Nandankanan Biological Park, Cuttack, Orissa — 500 CL, 393 CW, 388 PL, 148 H, 15 kg. Six specimens from Cauvery River drainage:

A. Living female from Moyar River near Palthatti, Nilgiris District, Tamil Nadu, currently at Madras Crocodile Bank — 548 CL, 410 CW, 385 PL, 125 H, 14.5 kg.

B. Two carapaces from the Moyar River, Thivuginamadavu, 25 Km NE Gudalur, Nilgiris District, Tamil Nadu: EOM 2789 and EOM 2790 — lengths of bony carapaces, 240 and 333 respectively.

C. One male and two carapaces from the confluence of the Bhavani and Moyar Rivers, Bhavani Sagar Reservoir, Periyar District, Tamil Nadu: FMNH 224231 — 635 CL, 471 CW, 427 PL, 154 H, 19.5 kg. EOM 2816 and 2817 — lengths of bony carapaces — 364 and 271 respectively.

Smith (1931) gives the range as the Ganges and rivers of peninsular India. On our survey we found no *T. leithii* in the Ganges River drainage. Annandale (1915a) also questioned the validity of records of this species from the Ganges but shortly thereafter he (1915b) reported finding several young specimens in an old collection in the Indian Museum from Allahabad and the River Hughli.

We question these identifications as Annandale's key to the *Trionyx* (1912a) used inadequate characteristics to differentiate between *leithii* and *gangeticus* (particularly juveniles). The key stated that ocelli are present on *leithii* juveniles and absent on *gangeticus*. Ocelli, however, are present on the

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young of both (see photos of juvenile *gangeticus* in Daniel (1983) and Pritchard (1979). The key also stated that only *gangeticus* possessed a ridge along the inner mandible. We have noted, however, that this ridge seems to develop with age and is difficult to discern in juveniles. As all of the *T. leithii* records from the Ganges are young specimens it is possible that Annandale simply misidentified young *gangeticus*. Similarly Annandale's (1912b) identification of young *Trionyx leithii* collected by Blanford from the Hasdo, a tributary of the Mahanadi River also requires verification.

The key in Smith (1931) follows that of Annandale (1912a) thus perpetuating identification errors. A better external characteristic for identifying *T. leithii* is a dense patch of flat wart-like tubercles at the mid-anterior edge of the carapace. An additional patch of tubercles usually occurs along the midline just posterior to the bony portion of the shell. We have found this character to be discernible on individuals as small as 80 mm CL. Smaller individuals still need to be examined to determine the reliability of this characteristic in early ontogenetic stages.

Considering the uncertainty of many of the records for this species, these new localities seem worth publishing. The specimens from Kotipalle on the Godaveri River verify Anderson's identifications of the *Trionyx* collected by Blanford (1879) on this river. The speci-

men from Balimela reservoir confirms the occurrence of the species in Orissa albeit from the Godaveri not the Mahanadi drainage. The Balimela turtle is unusual in coloration being very dark dorsally (almost black) with the plastron (usually white) also being suffused with dark pigment. The specimens from the Moyar and Bhavani Rivers represent the first records of the genus from the Cauvery River drainage.

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